

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A network access server (NAS) ~~providing a user with access and connection to a global data communications internetwork, said NAS being capable of communicating with a home gateway server (HGS) associated with a home domain, the said~~ NAS comprising:

an HGS identifier for identifying ~~the~~ a home gateway server (HGS) of an Internet service provider (ISP), the HGS associated with a ~~the~~ home domain to which a ~~the~~ request for an IP address is to be transmitted, the ISP and a Network Access Provider (NAP) of the NAS being separate, wherein the HGS identifier is responsive to log-in information provided by a ~~the~~ user;

an IP address requester for requesting an IP address from the HGS, the HGS maintaining a pool of IP addresses for allocation to authorized users, the said IP address requester configured to transmit the user's authentication information to the HGS with the request for an IP address from the HGS;

an IP address relay for receiving an IP address allocated to the user from the HGS and for relaying the allocated IP address to the user; and

a memory coupled with the said IP address requester and the said IP address relay, the said memory storing an association between an identification of the user and the IP address allocated to the user, the NAS providing a user with access and connection to a global data communications internetwork.

2. (Currently Amended) The network access server of claim 1, further comprising:

a detector for periodically detecting connection of the user to the NAS, the said detector updating the association in the said memory to indicate that the allocated IP address is no longer in use if the connection of the user is lost.

3. (Previously Presented) The network access server of claim 1, further comprising:  
a receiver for receiving periodic queries from the HGS about the status of the user connection to the NAS; and  
a responder responsive to the periodic queries for informing the HGS that the user is still connected to the NAS.
4. (Currently Amended) The network access server of claim 1, further comprising:  
a receiver for receiving periodic signals from the user;  
a forwarder responsive to the said receiver for forwarding information to the HGS that the user is still connected to the NAS.

5-8. (Cancelled)

9. (Previously Presented) The network access server of claim 1, wherein the HGS identifier is responsive to call information associated with the incoming line used by the user to access the NAS.

10-12. (Cancelled)

13. (Previously Presented) The network access server of claim 1, further comprising:

a generator, responsive to the receipt of a disconnection request from the user, for generating and sending a notice to the HGS that the user is no longer connected to the NAS.

14-20. (Cancelled)

21. (Currently Amended) A method ~~for providing an IP address to a user in a data communications network, the method comprising:~~  
establishing a connection with a user;  
receiving authentication information from the user, the authentication information including a user identification;  
storing the user identification in a memory;  
determining a home domain for the said user, wherein the said determining is responsive to the said receiving;  
transmitting the said authentication information from the said user with a request for an IP address from a an home gateway server (HGS) of an Internet service provider (ISP), the HGS associated with the said home domain, the ISP and a Network Access Provider (NAP) of the NAS being separate, the HGS maintaining a pool of IP addresses for allocation to authorized users;  
receiving an IP address allocated to the user from the HGS;  
creating and storing an association between the user identification and the allocated IP address in the memory;  
transmitting the allocated IP address to the user; and  
providing the user with access and connection to a global data communications internetwork.

22. (Previously Presented) The method of claim 21, further comprising:
- detecting a continuing connection with the user; and
  - sending periodic keep-alive messages associated with the user to the HGS as long as the continuing connection with the user is detected.
23. (Previously Presented) The method of claim 21, further comprising:
- receiving periodic queries from the HGS about the status of the user connection; and
  - responding to the periodic queries that the user is still connected.
24. (Previously Presented) The method of claim 21, further comprising:
- receiving periodic in-use signals from the user; and
  - forwarding information to the HGS that the user is still connected.
25. (Cancelled)
26. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program of instructions readable by the machine to perform a method ~~for providing an IP address to a user in a data communications network~~, the method comprising:
- establishing a connection with a user;
  - receiving authentication information from the user, the authentication information including a user identification;
  - storing the user identification in a memory;

determining a home domain for the said user, wherein the said determining is responsive to the said receiving;

transmitting the said authentication information from the said user with a request for an IP address from a an home gateway server (HGS) of an Internet service provider (ISP), the HGS associated with the said home domain, the ISP and a Network Access Provider (NAP) of the NAS being separate, the HGS maintaining a pool of IP addresses for allocation to authorized users;

receiving an IP address allocated to the user from the HGS;

creating and storing an association between the user identification and the allocated IP address in the memory;

transmitting the allocated IP address to the user; and

providing the user with access and connection to a global data communications internetwork.

27. (Previously Presented) The program storage device of claim 26, wherein the method further comprises:

detecting a continuing connection with the user; and

sending periodic keep-alive messages associated with the user to the HGS as long as the continuing connection with the user is detected.

28. (Previously Presented) The program storage device of claim 26, wherein the method further comprises:

receiving periodic queries from the HGS about the status of the user connection; and

responding to the periodic queries that the user is still connected.

29. (Previously Presented) The program storage device of claim 26, wherein the method further comprises:

receiving periodic queries from the HGS about the status of the user connection; and  
responding to the periodic queries that the user is still connected.

30-44. (Cancelled)

45. (Currently Amended) An apparatus for providing an IP address to a user in a data communications network, the apparatus comprising:

means for establishing a connection with a user;

means for receiving authentication information from the user, the authentication information including a user identification;

means for storing the user identification in a memory;

means for determining a home domain for the said user, wherein the said determining is responsive to the said receiving;

means for transmitting the said authentication information from the said user with a request for an IP address from an HGS associated with the said home domain on behalf of the user, the HGS maintaining a pool of IP addresses for allocation to authorized users;

means for receiving an IP address allocated to the user from the HGS;

means for creating and storing an association between the user identification and the allocated IP address in the memory;

means for transmitting the allocated IP address to the user; and

means for providing the user with access and connection to a global data communications  
internetwork.

46. (Previously Presented) The apparatus of claim 45, further comprising:

means for detecting a continuing connection with the user; and

means for sending periodic keep-alive messages associated with the user to the HGS as long  
as the continuing connection with the user is detected.

47. (Previously Presented) The apparatus of claim 45, further comprising:

means for receiving periodic queries from the HGS about the status of the user connection;  
and

means for responding to the periodic queries that the user is still connected.

48. (Previously Presented) The apparatus of claim 47, further comprising:

means for receiving periodic in-use signals from the user; and

means for forwarding information to the HGS that the user is still connected.

49. (Cancelled)

50. (Currently Amended) The network access server in accordance with claim 2, further  
comprising:

a keep-alive sender coupled to the said detector, said keep-alive sender periodically  
informing the HGS that the user is still connected to the NAS until the connection is  
lost.

51. (Cancelled)

52. (Currently Amended) The network access server in accordance with claim 1 wherein the ~~said~~ IP address requester uses Remote Authentication Dial In User Service (RADIUS).

53. (Cancelled)

54. (Currently Amended) The method in accordance with claim 22, further comprising:  
updating the association in the ~~said~~ memory to indicate that the allocated IP address is no longer in use if the connection is lost.

55. (Previously Presented) The method in accordance with claim 21, further comprising:  
receiving a disconnection request from the user; and  
generating and sending a notice to the HGS that the user is no longer connected.

56. (Cancelled)

57. (Currently Amended) The method in accordance with claim 21, wherein the ~~said~~ determining is in response to call information associated with an incoming line used by the user.

58. (Currently Amended) The apparatus in accordance with claim 45 wherein the ~~said~~ means for requesting includes:



means for transmitting the user's authentication information to the HGS.

59. (Currently Amended) The apparatus in accordance with claim 46, further comprising:

means for updating the association in the ~~said~~ memory to indicate that the allocated IP address is no longer in use if the connection is lost.

60. (Previously Presented) The apparatus in accordance with claim 45, further comprising:

means for receiving a disconnection request from the user; and

means for generating and sending a notice to the HGS that the user is no longer connected.

61. (Cancelled)

62. (Currently Amended) The apparatus in accordance with claim 45, wherein the ~~said~~ means

for determining performs in response to call information associated with an incoming line used by the user.

63. (Currently Amended) The network access server in accordance with claim 1 wherein the

~~said~~ memory stores the association as long as the user maintains the connection with the ~~said~~ NAS.

64. (Previously Presented) The network access server of claim 1, wherein the global data

communications internetwork is the Internet.

65. (Previously Presented) The method of claim 21, wherein the global data communications internetwork is the Internet.

66. (Previously Presented) The program storage device of claim 26, wherein the global data communications internetwork is the Internet.

67. (Previously Presented) The apparatus of claim 45, wherein the global data communications internetwork is the Internet.

68. (Previously Presented) The network access server of claim 1 wherein the user belongs to the home domain.

69. (Previously Presented) The method of claim 21 wherein the user belongs to the home domain.

70. (Previously Presented) The program storage device of claim 26 wherein the user belongs to the home domain.

71. (Previously Presented) The apparatus of claim 45 wherein the user belongs to the home domain.

72-74. (Cancelled)